

## Textbook Alignment to the Utah Core – 9<sup>th</sup> Grade Earth Systems

*This alignment has been completed using an “Independent Alignment Vendor” from the USOE approved list ([www.schools.utah.gov/curr/imc/indvvendor.html](http://www.schools.utah.gov/curr/imc/indvvendor.html).) Yes N/A No N/A*

**Name of Company and Individual Conducting Alignment:**  
**No approved Independent Alignment Vendor required for this correlation**

A “Credential Sheet” has been completed on the above company/evaluator and is (Please check one of the following):

- ☐ On record with the USOE.
- ☐ The “Credential Sheet” is attached to this alignment.

**Instructional Materials Evaluation Criteria (name and grade of the core document used to align):** 9<sup>th</sup> Grade Earth System Core Curriculum

**Title:** Science Explorer: Environmental Science, Inside Earth, Earth’s Changing Surface, Earth’s Waters, Weather and Climate, Astronomy, Motion © 2007 ISBN#: 0-13-201148-4 (SE); 0-13-201166-2 (TE); 0-13-201149-2 (SE); 0-13-201167-0 (TE); 0-13-201150-6 (SE); 0-13-201168-9 (TE); 0-13-201151-4 (SE); 0-13-201169-7 (TE); 0-13-201152-2 (SE); 0-13-201170-0 (TE); 0-13-201154-9 (SE); 0-13-201171-9 (TE); 0-13-201157-3 (SE); 0-13-201174-3 (TE); 0-13-201160-3 (SE); 0-13-201177-8 (TE)

**Publisher:** Pearson publishing as Prentice Hall

**Overall percentage of coverage in the *Student Edition (SE)* and *Teacher Edition (TE)* of the Utah State Core Curriculum:**  
100%

**Overall percentage of coverage in *ancillary materials* of the Utah Core Curriculum:** \_\_\_\_\_%

**STANDARD I:** Students will understand the scientific evidence that supports theories that explain how the universe and solar system developed.

Percentage of coverage in the <i>student and teacher edition</i> for Standard I: _____ <u>100</u> %		Percentage of coverage not in student or teacher edition, but covered in the <i>ancillary material</i> for Standard I: _____ %		
OBJECTIVES & INDICATORS		Coverage in <i>Student Edition (SE) and Teacher Edition (TE)</i> (pg #'s, etc.)	Coverage in <i>Ancillary Material</i> (titles, pg #'s, etc.)	<i>Not covered in TE, SE or ancillaries</i> ✓
<b>Objective 1.1:</b> Describe the big bang theory and evidence supporting it.				
<b>a.</b>	Determine the motion of a star relative to Earth based on a red or blue shift in the wavelength of light from the star.	(ASTRONOMY) SE/TE: Can be developed from 148-153	(ASTRONOMY) TR: GRSW The Expanding Universe TECH: T J45-J47; GO Links on the expanding universe	
<b>b.</b>	Explain how evidence of red and blue shifts is used to determine whether the universe is expanding or contracting.	(ASTRONOMY) SE/TE: Can be developed from 148-153	(ASTRONOMY) TR: GRSW The Expanding Universe TECH: T J45-J47; GO Links on the expanding universe	
<b>c.</b>	Describe the big bang theory and the red shift evidence that supports this theory.	(ASTRONOMY) SE/TE: Can be developed from 148-153	(ASTRONOMY) TR: GRSW The Expanding Universe TECH: T J45-J47; GO Links on the expanding universe	
<b>d.</b>	Investigate and report how science has changed the accepted ideas regarding the nature of the universe throughout history.	(ASTRONOMY) SE/TE: 6-13, 16-19, 30-33, 72-77	(ASTRONOMY) TR: GRSW Earth in Space, Gravity and Motion, Earth's Moon, Observing the Solar System, The Sun TECH: T J1-J7, J12, J13, J22-J24; GO Links on Gravity, Links on Earth's moon, More on the Sun; VFT Earth, Moon, and Sun	
<b>e.</b>	Provide an example of how technology has helped scientists investigate the universe.	(ASTRONOMY) SE/TE: 40-45, 48-52, 53-57, 118-124	(ASTRONOMY) TR: GRSW The Science of Rockets, The Space Program, Telescopes TECH: T J15-J19, J35,	

			J36; GO More on Lunar Exploration, Exploring Space Today, Links on space exploration; VFT Exploring Space	
<b>Objective 1.2:</b> Relate the structure and composition of the solar system to the processes that exist in the universe.				
<b>a.</b>	Compare the elements formed in the big bang (hydrogen, helium) with elements formed through nuclear fusion in stars.	(ASTRONOMY) SE/TE: 78-82, 136-140, 148-153	(ASTRONOMY) TR: GRSW The Sun, Lives of Stars, The Expanding Universe TECH: T J23, J24, J42, J43, J45-J47; GO More on the sun, Links on the expanding universe; VFT Stars, Galaxies, and the Universe	
<b>b.</b>	Relate the life cycle of stars of various masses to the relative mass of elements produced.	(ASTRONOMY) SE/TE: 136-140	(ASTRONOMY) TR: GRSW Lives of Stars TECH: T J42, J43; VFT Stars, Galaxies, and the Universe	
<b>c.</b>	Explain the origin of the heavy elements on Earth (i.e., heavy elements were formed by fusion in ancient stars).	(ASTRONOMY) SE/TE: Can be developed from 78-82	(ASTRONOMY) TR: GRSW The Sun TECH: T J23, J24; GO More on the sun	
<b>d.</b>	Present evidence that the process that formed Earth's heavy elements continues in stars today.	(ASTRONOMY) SE/TE: 136-140	(ASTRONOMY) TR: GRSW Lives of Stars TECH: T J42, J43; VFT Stars, Galaxies, and the Universe	
<b>e.</b>	Compare the life cycle of the sun to the life cycle of other stars.	(ASTRONOMY) SE/TE: 136-140	(ASTRONOMY) TR: GRSW Lives of Stars TECH: T J42, J43; VFT Stars, Galaxies, and the Universe	
<b>f.</b>	Relate the structure of the solar system to the forces acting upon it.	(ASTRONOMY) SE/TE: 78-82	(ASTRONOMY) TR: GRSW The Sun TECH: T J23, J24; GO More on the sun	
<b>STANDARD II: Students will understand that the features of Earth's evolving environment affect living systems, and that life on Earth is unique in the solar system.</b>				
Percentage of coverage in the <i>student and teacher edition</i> for		Percentage of coverage not in student or teacher edition, but		

Standard II: <u>100</u> %		covered in the <i>ancillary material</i> for Standard II: _____ %		
OBJECTIVES & INDICATORS		Coverage in <i>Student Edition</i> (SE) and <i>Teacher Edition</i> (TE) (pg #'s, etc.)	Coverage in <i>Ancillary Material</i> (titles, pg #'s, etc.)	Not covered in TE, SE or ancillaries ✓
<b>Objective 2.1:</b> Describe the unique physical features of Earth's environment that make life on Earth possible.				
a.	Compare Earth's atmosphere, solar energy, and water to those of other planets and moons in the solar system.	(ASTRONOMY) SE/TE: 84-91, 94-101	(ASTRONOMY) TR: GRSW The Inner Planets, The Outer Planets TECH: T J25-J30; GO Links on the planets, More on the planets; VFT The Solar System	
b.	Compare the conditions that currently support life on Earth to the conditions that exist on other planets in the solar system.	(ASTRONOMY) SE/TE: 84-91, 94-101	(ASTRONOMY) TR: GRSW The Inner Planets, The Outer Planets TECH: T J25-J30; GO Links on the planets, More on the planets; VFT The Solar System	
c.	Evaluate evidence for existence of life in other star systems, planets, or moons, either now or in the past.	(ASTRONOMY) SE/TE: 108-111	(ASTRONOMY) TR: GRSW Is There Life Beyond Earth? TECH: T J33; GO Links on extraterrestrial life	
<b>Objective 2.2:</b> Analyze how ecosystems differ from each other due to abiotic and biotic factors.				
a.	Observe and list abiotic factors (e.g., temperature, water, nutrients, sunlight, pH, topography) in specific ecosystems.	(ENVIRONMENTAL SCIENCE) SE/TE: 7-8, 12	(ENVIRONMENTAL SCIENCE) TR: GRSW Living Things and the Environment, LAB WS A World in a Bottle TECH: T E1; GO Links on biotic and abiotic factors	
b.	Observe and list biotic factors (e.g., plants, animals, organic matter) that affect a specific ecosystem (e.g., wetlands, deserts, aquatic).	(ENVIRONMENTAL SCIENCE) SE/TE: 58-67, 68-69, 70-73, 74-75	(ENVIRONMENTAL SCIENCE) TR: GRSW Biomes, Aquatic Ecosystems; LAB	

			WS Biomes in Miniature, Change in a Tiny Community <b>TECH:</b> T E21, E22, E23; GO Links Earth's Biome Activities, Aquatic ecosystems; VFT Rain Forest Biomes	
c.	Predict how an ecosystem will change as a result of major changes in an abiotic and/or biotic factor.	<b>(ENVIRONMENTAL SCIENCE)</b> <b>SE/TE:</b> 58-67, 68-69, 70-73, 74-75	<b>(ENVIRONMENTAL SCIENCE)</b> <b>TR:</b> GRSW Biomes, Aquatic Ecosystems; LAB WS Biomes in Miniature, Change in a Tiny Community <b>TECH:</b> T E21, E22, E23; GO Links Earth's Biome Activities, Aquatic ecosystems; VFT Rain Forest Biomes	
d.	Explain that energy enters the vast majority of Earth's ecosystems through photosynthesis, and compare the path of energy through two different ecosystems.	<b>(ENVIRONMENTAL SCIENCE)</b> <b>SE/TE:</b> 42-47, 48-53	<b>(ENVIRONMENTAL SCIENCE)</b> <b>TR:</b> GRSW Energy Flow in Ecosystems, Cycles of Matter <b>TECH:</b> T E14, E15, E16, E17, E18; GO Links on food chains and food webs, water cycle activity	
e.	Analyze interactions within an ecosystem (e.g., water temperature and fish species, weathering and water pH).	<b>(ENVIRONMENTAL SCIENCE)</b> <b>SE/TE:</b> 24-31	<b>(ENVIRONMENTAL SCIENCE)</b> <b>TR:</b> GRSW Interactions Among Living Things <b>TECH:</b> T E6, E7; GO Links on More on population interactions	
f.	Plan and conduct an experiment to investigate how abiotic factors influence organisms and how organisms influence the physical environment.	<b>(ENVIRONMENTAL SCIENCE)</b> <b>SE/TE:</b> 12, 68-69, 74-75	<b>(ENVIRONMENTAL SCIENCE)</b> <b>TR:</b> LAB WS A World in a Bottle, Biomes in Miniature, Change in a Tiny Community <b>TECH:</b> GO Links on biotic and abiotic factors	
<b>Objective 2.3:</b> Examine Earth's diversity of life as it changes over time.				
a.	Observe and chart the diversity in a specific area.	<b>(ENVIRONMENTAL SCIENCE)</b> <b>SE/TE:</b> 95-105	<b>(ENVIRONMENTAL SCIENCE)</b> <b>TR:</b> GRSW Biodiversity	

			TECH: GO Links More on Biodiversity; VFT Living Resources	
b.	Compare the diversity of life in various biomes specific to number of species, biomass, and type of organisms.	(ENVIRONMENTAL SCIENCE) SE/TE: 95-105	(ENVIRONMENTAL SCIENCE) TR: GRSW Biodiversity TECH: GO Links More on Biodiversity; VFT Living Resources	
c.	Explain factors that contribute to the extinction of a species.	(ENVIRONMENTAL SCIENCE) SE/TE: 95-105	(ENVIRONMENTAL SCIENCE) TR: GRSW Biodiversity TECH: GO Links More on Biodiversity; VFT Living Resources	
d.	Compare evidence supporting various theories that explain the causes of large-scale extinctions in the past with factors causing the loss of species today.	(ENVIRONMENTAL SCIENCE) SE/TE: 95-105	(ENVIRONMENTAL SCIENCE) TR: GRSW Biodiversity TECH: GO Links More on Biodiversity; VFT Living Resources	
e.	Evaluate the biological, esthetic, ethical, social, or economic arguments with regard to maintaining biodiversity.	(ENVIRONMENTAL SCIENCE) SE/TE: 95-105	(ENVIRONMENTAL SCIENCE) TR: GRSW Biodiversity TECH: GO Links More on Biodiversity; VFT Living Resources	
<b>STANDARD III: Students will understand that gravity, density, and convection move Earth's plates and this movement causes the plates to impact other Earth systems.</b>				
Percentage of coverage in the <i>student and teacher edition</i> for Standard III: <u>100</u> %		Percentage of coverage not in student or teacher edition, but covered in the <i>ancillary material</i> for Standard III: _____%		
<b>OBJECTIVES &amp; INDICATORS</b>		Coverage in <i>Student Edition (SE) and Teacher Edition (TE)</i> (pg #'s, etc.)	Coverage in <i>Ancillary Material</i> (titles, pg #'s, etc.)	<i>Not covered in TE, SE or ancillaries</i> ✓
<b>Objective 3.1:</b> Explain the evidence that supports the theory of plate tectonics.				
a.	Define and describe the location of the major plates and plate boundaries.	(INSIDE EARTH) SE/TE: 18-22, 23-29, 30-31, 32-36	(INSIDE EARTH) TR: GRSW Drifting Continents, Sea-Floor	

			Spreading, The Theory of Plate Tectonics; LAB WS Modeling Sea-floor spreading <b>TECH:</b> T F6-F9; GO Links on Continental drift, Sea-floor spreading, Plate boundaries, Continental drift activity; VFT Plate Tectonics	
<b>b.</b>	Compare the movement and results of movement along convergent, divergent, and transform plate boundaries.	<b>(INSIDE EARTH)</b> <b>SE/TE:</b> 18-22, 23-29, 30-31, 32-36	<b>(INSIDE EARTH)</b> <b>TR:</b> GRSW Drifting Continents, Sea-Floor Spreading, The Theory of Plate Tectonics; LAB WS Modeling Sea-floor spreading <b>TECH:</b> T F6-F9; GO Links on Continental drift, Sea-floor spreading, Plate boundaries, Continental drift activity; VFT Plate Tectonics	
<b>c.</b>	Relate the location of earthquakes and volcanoes to plate boundaries.	<b>(INSIDE EARTH)</b> <b>SE/TE:</b> 68-73, 82-86	<b>(INSIDE EARTH)</b> <b>TR:</b> GRSW Earthquake Safety, Volcanoes and Plate Boundaries; LAB WS Mapping Earthquakes and Volcanoes <b>TECH:</b> T F21, F22, X, Y; GO Links on Earthquake risks, seismic safe buildings, Volcanoes	
<b>d.</b>	Explain Alfred Wegener's continental drift hypothesis, his evidence, and why it was not accepted in his time.	<b>(INSIDE EARTH)</b> <b>SE/TE:</b> 18-22	<b>(INSIDE EARTH)</b> <b>TR:</b> GRSW Drifting Continents <b>TECH:</b> T F6-F9; GO Links on Continental drift, Sea-floor spreading, Plate boundaries, Continental drift activity; VFT Plate Tectonics	
<b>e.</b>	Evaluate the evidence for the current theory of plate tectonics.	<b>(INSIDE EARTH)</b> <b>SE/TE:</b> 32-36	<b>(INSIDE EARTH)</b> <b>TR:</b> GRSW The Theory of Plate Tectonics <b>TECH:</b> T F10-F12; GO Links More on Plate boundaries; VFT Plate Tectonics	

<b>Objective 3.2:</b> Describe the processes within Earth that result in plate motion and relate it to changes in other Earth systems.				
<b>a.</b>	Identify the energy sources that cause material to move within Earth.	<b>(INSIDE EARTH)</b> <b>SE/TE:</b> 14-17	<b>(INSIDE EARTH)</b> <b>TR:</b> GRSW Convection and the Mantle; <b>TECH:</b> T F3, F4; Go Links More on Convection currents in the mantle	
<b>b.</b>	Model the movement of materials within Earth.	<b>(INSIDE EARTH)</b> <b>SE/TE:</b> 37	<b>(INSIDE EARTH)</b> <b>TR:</b> LAB WS Modeling Mantle Convection Currents <b>TECH:</b> T F3, F4; Go Links More on Convection currents in the mantle	
<b>c.</b>	Model the movement and interaction of plates.	<b>(INSIDE EARTH)</b> <b>SE/TE:</b> 30-31	<b>(INSIDE EARTH)</b> <b>TR:</b> LAB WS Modeling Sea-floor Spreading <b>TECH:</b> T F9, VFT Plate Tectonics	
<b>d.</b>	Relate the movement and interaction of plates to volcanic eruptions, mountain building, and climate changes.	<b>(INSIDE EARTH)</b> <b>SE/TE:</b> 18-22, 23-29, 30-31, 32-36	<b>(INSIDE EARTH)</b> <b>TR:</b> GRSW Drifting Continents, Sea-Floor Spreading, The Theory of Plate Tectonics; LAB WS Modeling Sea-floor spreading <b>TECH:</b> T F6-F9; GO Links on Continental drift, Sea-floor spreading, Plate boundaries, Continental drift activity; VFT Plate Tectonics	
<b>e.</b>	Predict the effects of plate movement on other Earth systems (e.g., volcanic eruptions affect weather, mountain building diverts waterways, uplift changes elevation that alters plant and animal diversity, upwelling from ocean vents results in changes in biomass).	<b>(INSIDE EARTH)</b> <b>SE/TE:</b> 68-73, 82-86	<b>(INSIDE EARTH)</b> <b>TR:</b> GRSW Earthquake Safety, Volcanoes and Plate Boundaries; LAB WS Mapping Earthquakes and Volcanoes <b>TECH:</b> T F21, F22, X, Y; GO Links on Earthquake risks, seismic safe buildings, Volcanoes	

**STANDARD IV: Students will understand that water cycles through and between reservoirs in the hydrosphere and affects the other spheres of the Earth system.**



<b>Percentage of coverage in the <i>student and teacher edition</i> for Standard IV: <u>100</u> %</b>		<b>Percentage of coverage not in student or teacher edition, but covered in the <i>ancillary material</i> for Standard IV: _____ %</b>		
<b>OBJECTIVES &amp; INDICATORS</b>		<b>Coverage in <i>Student Edition (SE)</i> and <i>Teacher Edition (TE)</i> (pg #'s, etc.)</b>	<b>Coverage in <i>Ancillary Material</i> (titles, pg #'s, etc.)</b>	<i>Not covered in TE, SE or ancillaries ✓</i>
<b>Objective 4.1:</b> Explain the water cycle in terms of its reservoirs, the movement between reservoirs, and the energy to move water. Evaluate the importance of freshwater to the biosphere.				
<b>a.</b>	Identify the reservoirs of Earth's water cycle (e.g., ocean, ice caps/glaciers, atmosphere, lakes, rivers, biosphere, groundwater) locally and globally, and graph or chart relative amounts in global reservoirs.	<b>(EARTH'S WATERS)</b> <b>SE/TE:</b> 12-17, 19-27, 34-39	<b>(EARTH'S WATERS)</b> <b>TR:</b> GRSW Water on Earth, Surface Water, Water Underground <b>TECH:</b> T H4-H11; GO Links on Water Cycle Activity, More on Surface Water, Water Underground	
<b>b.</b>	Illustrate the movement of water on Earth and describe how the processes that move water (e.g., evaporation of water, melting of ice/snow, ocean currents, movement of water vapor by wind) use energy from the sun.	<b>(EARTH'S WATERS)</b> <b>SE/TE:</b> 12-17	<b>(EARTH'S WATERS)</b> <b>TR:</b> GRSW Water on Earth <b>TECH:</b> T H4, H5; GO Links on Water Cycle Activity	
<b>c.</b>	Relate the physical and chemical properties of water to a water pollution issue.	<b>(EARTH'S WATERS)</b> <b>SE/TE:</b> 6-11	<b>(EARTH'S WATERS)</b> <b>TR:</b> GRSW The Properties of Water <b>TECH:</b> T H1-H3; GO Links on Water properties	
<b>d.</b>	Make inferences about the quality and/or quantity of freshwater, using data collected from local water systems.	<b>(EARTH'S WATERS)</b> <b>SE/TE:</b> 48-56	<b>(EARTH'S WATERS)</b> <b>TR:</b> GRSW Water Supply and Demand; LAB WS Getting the Salt Out <b>TECH:</b> T H15, H16; GO Links on Water Conservation	
<b>e.</b>	Analyze how communities deal with water shortages, distribution, and quality in designing a long-term water use plan.	<b>(EARTH'S WATERS)</b> <b>SE/TE:</b> 48-56	<b>(EARTH'S WATERS)</b> <b>TR:</b> GRSW Water Supply and Demand; LAB WS Getting the Salt Out <b>TECH:</b> T H15, H16; GO Links on Water	

			Conservation	
<b>Objective 4.2:</b> Analyze the physical and biological dynamics of the oceans.				
<b>a.</b>	Describe the physical dynamics of the oceans (e.g., wave action, ocean currents, El Nino, tides).	<b>(EARTH'S WATERS)</b> <b>SE/TE:</b> 94-101, 102-107, 116-121	<b>(EARTH'S WATERS)</b> <b>TR:</b> GRSW Wave Action, Tides, Currents and Climates <b>TECH:</b> T H29-H34, H37-H40; GO Links on Water motion activity, More on tides, Ocean currents; VFT Ocean Motions	
<b>b.</b>	Determine how physical properties of oceans affect organisms (e.g., salinity, depth, tides, temperature).	<b>(EARTH'S WATERS)</b> <b>SE/TE:</b> 94-101, 102-107, 116-121	<b>(EARTH'S WATERS)</b> <b>TR:</b> GRSW Wave Action, Tides, Currents and Climates <b>TECH:</b> T H29-H34, H37-H40; GO Links on Water motion activity, More on tides, Ocean currents; VFT Ocean Motions	
<b>c.</b>	Model energy flow in ocean ecosystems.	<b>(EARTH'S WATERS)</b> <b>SE/TE:</b> 94-101, 102-107	<b>(EARTH'S WATERS)</b> <b>TR:</b> GRSW Wave Action, Tides <b>TECH:</b> T H29-H34; GO Links on Water motion activity, More on tides, Ocean currents; VFT Ocean Motions	
<b>d.</b>	Research and report on changing ocean levels over geologic time, and relate changes in ocean level to changes in the water cycle.	<b>(EARTH'S WATERS)</b> <b>SE/TE:</b> 12-17	<b>(EARTH'S WATERS)</b> <b>TR:</b> GRSW Water on Earth <b>TECH:</b> T H4, H5; GO Links on Water Cycle Activity	
<b>e.</b>	Describe how changing sea levels could affect life on Earth.	<b>(EARTH'S WATERS)</b> <b>SE/TE:</b> 94-101, 102-107	<b>(EARTH'S WATERS)</b> <b>TR:</b> GRSW Wave Action, Tides, Currents and Climates <b>TECH:</b> T H29-H34; GO Links on Water motion activity, More on tides, Ocean currents; VFT Ocean Motions	
<b>STANDARD V: Students will understand that Earth's atmosphere interacts with and is altered by the lithosphere, hydrosphere, and biosphere.</b>				

<b>Percentage of coverage in the <i>student and teacher edition</i> for Standard V: <u>100</u> %</b>		<b>Percentage of coverage not in student or teacher edition, but covered in the <i>ancillary material</i> for Standard V: _____ %</b>		
<b>OBJECTIVES &amp; INDICATORS</b>		<b>Coverage in <i>Student Edition (SE)</i> and <i>Teacher Edition (TE)</i> (pg #'s, etc.)</b>	<b>Coverage in <i>Ancillary Material</i> (titles, pg #'s, etc.)</b>	<i>Not covered in TE, SE or ancillaries ✓</i>
<b>Objective 5.1:</b> Describe how matter in the atmosphere cycles through other Earth systems.				
<b>a.</b>	Trace movement of a carbon atom from the atmosphere through a plant, animal, and decomposer, and back into the atmosphere.	<b>(WEATHER AND CLIMATE)</b> <b>SE/TE:</b> Can be developed from 6-9	<b>(WEATHER AND CLIMATE)</b> <b>TR:</b> Can be developed from GRSW The Air Around You <b>TECH:</b> Can be developed from T I1, I2; GO Links on Atmosphere	
<b>b.</b>	Diagram the nitrogen cycle and provide examples of human actions that affect this cycle (e.g., fertilizers, crop rotation, fossil fuel combustion).	<b>(WEATHER AND CLIMATE)</b> <b>SE/TE:</b> Can be developed from 6-9	<b>(WEATHER AND CLIMATE)</b> <b>TR:</b> Can be developed from GRSW The Air Around You <b>TECH:</b> Can be developed from T I1, I2; GO Links on Atmosphere	
<b>c.</b>	Interpret evidence suggesting that humans are influencing the carbon cycle.	<b>(WEATHER AND CLIMATE)</b> <b>SE/TE:</b> 130-134, 135-141	<b>(WEATHER AND CLIMATE)</b> <b>TR:</b> GRSW Long-Term Changes in Climate, Global Changes in the Atmosphere <b>TECH:</b> T I46-I48; GO Links on Continental Drift, More on the Greenhouse effect; VFT Climate Change	
<b>d.</b>	Research ways the biosphere, hydrosphere, and lithosphere interact with the atmosphere (e.g., volcanic eruptions putting ash and gases into the atmosphere, hurricanes, changes in vegetation).	<b>(WEATHER AND CLIMATE)</b> <b>SE/TE:</b> 16-21	<b>(WEATHER AND CLIMATE)</b> <b>TR:</b> GRSW Layers of the Atmosphere <b>TECH:</b> T I6, I7; GO Links on the ozone layer	

<b>Objective 5.2:</b> Trace ways in which the atmosphere has been altered by living systems and has itself strongly affected living systems over the course of Earth's history.				
<b>a.</b>	Define ozone and compare its effects in the lower and upper atmosphere.	(WEATHER AND CLIMATE) SE/TE: 130-134, 135-141	(WEATHER AND CLIMATE) TR: GRSW Long-Term Changes in Climate, Global Changes in the Atmosphere TECH: T 146-148; GO Links on Continental Drift, More on the Greenhouse effect; VFT Climate Change	
<b>b.</b>	Describe the role of living organisms in producing the ozone layer and how the ozone layer affected the development of life on Earth.	(WEATHER AND CLIMATE) SE/TE: 130-134, 135-141	(WEATHER AND CLIMATE) TR: GRSW Long-Term Changes in Climate, Global Changes in the Atmosphere TECH: T 146-148; GO Links on Continental Drift, More on the Greenhouse effect; VFT Climate Change	
<b>c.</b>	Compare the rate at which CO <sub>2</sub> is put into the atmosphere to the rate at which it is removed through the carbon cycle.	(WEATHER AND CLIMATE) SE/TE: 130-134, 135-141	(WEATHER AND CLIMATE) TR: GRSW Long-Term Changes in Climate, Global Changes in the Atmosphere TECH: T 146-148; GO Links on Continental Drift, More on the Greenhouse effect; VFT Climate Change	
<b>d.</b>	Analyze data relating to the concentration of atmospheric CO <sub>2</sub> over the past 100 years.	(WEATHER AND CLIMATE) SE/TE: 130-134, 135-141	(WEATHER AND CLIMATE) TR: GRSW Long-Term Changes in Climate, Global Changes in the Atmosphere TECH: T 146-148; GO Links on Continental Drift, More on the Greenhouse effect; VFT Climate Change	

e.	Research, evaluate, and report on international efforts to protect the atmosphere.	(WEATHER AND CLIMATE) SE/TE: 130-134, 135-141	(WEATHER AND CLIMATE) TR: GRSW Long-Term Changes in Climate, Global Changes in the Atmosphere TECH: T 146-148; GO Links on Continental Drift, More on the Greenhouse effect; VFT Climate Change	
<b>STANDARD VI: Students will understand the source and distribution of energy on Earth and its effects on Earth systems.</b>				
Percentage of coverage in the <i>student and teacher edition</i> for Standard VI: _____ <b>100</b> %		Percentage of coverage not in student or teacher edition, but covered in the <i>ancillary material</i> for Standard VI: _____ %		
<b>OBJECTIVES &amp; INDICATORS</b>		Coverage in <i>Student Edition (SE) and Teacher Edition (TE)</i> (pg #'s, etc.)	Coverage in <i>Ancillary Material</i> (titles, pg #'s, etc.)	<i>Not covered in TE, SE or ancillaries</i> ✓
<b>Objective 6.1:</b> Describe the transformation of solar energy into heat and chemical energy on Earth and eventually the radiation of energy to space.				
a.	Illustrate the distribution of energy coming from the sun that is reflected, changed into heat, or stored by plants.	(ENVIRONMENTAL SCIENCE) SE/TE: 165-167	(ENVIRONMENTAL SCIENCE) TR: GRSW Renewable Sources of Energy TECH: T E49; VFT Energy Resources	
b.	Describe the pathways for converting and storing light energy as chemical energy (e.g., light energy converted to chemical energy stored in plants, plants become fossil fuel).	(WEATHER AND CLIMATE) SE/TE: 36-41, 42-45	(WEATHER AND CLIMATE) TR: GRSW Energy in Earth's Atmosphere, Heat Transfer; LAB WS Heating Earth's Surface TECH: T I10-I14; GO Links on Energy in Earth's Atmosphere, on Heat Transfer	
c.	Investigate the conversion of light energy from the sun into heat energy by various Earth materials.	(WEATHER AND CLIMATE) SE/TE: 36-41, 42-45	(WEATHER AND CLIMATE) TR: GRSW Energy in	

			Earth's Atmosphere, Heat Transfer; LAB WS Heating Earth's Surface <b>TECH:</b> T I10-I14; GO Links on Energy in Earth's Atmosphere, on Heat Transfer	
<b>d.</b>	Demonstrate how absorbed solar energy eventually leaves the Earth system as heat radiating to space.	<b>(WEATHER AND CLIMATE)</b> <b>SE/TE:</b> 36-41, 42-45	<b>(WEATHER AND CLIMATE)</b> <b>TR:</b> GRSW Energy in Earth's Atmosphere, Heat Transfer; LAB WS Heating Earth's Surface <b>TECH:</b> T I10-I14; GO Links on Energy in Earth's Atmosphere, on Heat Transfer	
<b>e.</b>	Construct a model that demonstrates the reduction of heat loss due to a greenhouse effect.	<b>(WEATHER AND CLIMATE)</b> <b>SE/TE:</b> 135-141	<b>(WEATHER AND CLIMATE)</b> <b>TR:</b> GRSW Global Changes in the Atmosphere <b>TECH:</b> T I46-I48; GO Links More on the Greenhouse effect; VFT Climate Change	
<b>f.</b>	Research global changes and relate them to Earth systems (e.g., global warming, solar fluctuations).	<b>(WEATHER AND CLIMATE)</b> <b>SE/TE:</b> 130-134	<b>(WEATHER AND CLIMATE)</b> <b>TR:</b> GRSW Long-Term Changes in Climate, Global Changes in the Atmosphere <b>TECH:</b> T I46-I48; GO Links on Continental Drift, More on the Greenhouse effect; VFT Climate Change	
<b>Objective 6.2:</b> Relate energy sources and transformation to the effects on Earth systems.				
<b>a.</b>	Describe the difference between climate and weather, and how technology is used to monitor changes in each.	<b>(WEATHER AND CLIMATE)</b> <b>SE/TE:</b> 108-115	<b>(WEATHER AND CLIMATE)</b> <b>TR:</b> GRSW What Causes Climate <b>TECH:</b> T I39-I41; GO Links The Seasons	
<b>b.</b>	Describe the effect of solar energy on the determination of	<b>(WEATHER AND CLIMATE)</b> <b>SE/TE:</b> 36-41, 42-45	<b>(WEATHER AND CLIMATE)</b>	

	climate and weather (e.g., El Nino, solar intensity).		<b>TR:</b> GRSW Energy in Earth's Atmosphere, Heat Transfer; LAB WS Heating Earth's Surface <b>TECH:</b> T I10-I14; GO Links on Energy in Earth's Atmosphere, on Heat Transfer	
c.	Explain how uneven heating at the equator and polar regions creates atmospheric and oceanic convection currents that move heat energy around Earth.	<b>(WEATHER AND CLIMATE)</b> <b>SE/TE:</b> 36-39, 40-41,54-60	<b>(WEATHER AND CLIMATE)</b> <b>TR:</b> GRSW Energy in Earth's Atmosphere, Water in the Atmosphere; LAB WS Heating Earth's Surface <b>TECH:</b> T I10-I12, I18-I20; GO Links on Energy in Earth's Atmosphere, Water Cycle Activity	
d.	Describe the Coriolis effect and its role in global wind and ocean current patterns.	<b>(WEATHER AND CLIMATE)</b> <b>SE/TE:</b> 46-53	<b>(WEATHER AND CLIMATE)</b> <b>TR:</b> GRSW Winds; LAB WS Measuring the Wind <b>TECH:</b> T I15-I17; GO Links Global Winds; VFT Weather Factors	
e.	Relate how weather patterns are the result of interactions among ocean currents, air currents, and topography.	<b>(WEATHER AND CLIMATE)</b> <b>SE/TE:</b> 36-39, 40-41, 46-53,54-60	<b>(WEATHER AND CLIMATE)</b> <b>TR:</b> GRSW Energy in Earth's Atmosphere, Winds; LAB WS Measuring the Wind Water in the Atmosphere, Heating Earth's Surface <b>TECH:</b> T I10-I12, I15-I17, I18-I20; GO Links on Energy in Earth's Atmosphere, Global Winds , Water Cycle Activity; VFT Weather Factors	